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NIH offers $1000 genome grant

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The National Institutes of Health (NIH) is now soliciting proposals for funding to work toward the much-vaunted $1000 genome. Earlier this month (February 12), the NIH published a request for applications (RFA) for grants to develop low-cost genome-sequencing technologies.

Sequencing an entire mammalian-sized genome currently costs between $10 million and $50 million, but NIH hopes that this number can be reduced by four orders of magnitude over the next 10 years, with the ultimate goal being a $1000 genome. "I think the science is ready, that we can make progress," said Jeff Schloss, director of the National Human Genome Research Institute (NHGRI) technology development program. Schloss said that the idea for a $1000 genome has been around for a while - it was mentioned at the end of the *Nature* article describing the initial human genome sequencing project - but only recently was the planning process completed to make funding available.

NIH simultaneously announced a related RFA for technologies reducing the cost of genome sequencing by only two orders of magnitude - a project expected to take only 5 years. NHGRI has $14 million to devote to the two projects, and while the RFA indicates a $2 million per-group cap, "we may not fund any at the maximum level," said Schloss. "We want to fund a pretty broad range" of projects.

Schloss added that companies will likely need to "argue that their technology is best for one or the other" of the projects. He told us that sequencing by extension might "get us to the $100,000 genome," but other technologies, like nanopore or microchannel approaches, would probably need to be developed to reach the $1000 goal.

Elaine Mardis, a Washington University geneticist involved with the initial human genome sequencing and analysis, said that collaborative efforts might be the most successful. "In my mind, the ideal situation would be company X with a novel technology that is going to partner with an academic high-throughput center and with a clinician or physician-scientist," she told us. "It's a mistake to fund a company to develop technology in a vacuum. You really need all three areas of expertise."

Several companies already may be poised to undertake this project. At the 14th International Genome Sequencing and Analysis Conference (GSAC) in October 2002, representatives of five biotech companies - Amersham Biosciences, 454 Corporation, Solexa, US Genomics, and VisiGen Biotechnologies - and Harvard University's Lipper Center for Computational Genetics presented their ideasfor developing faster and cheaper sequencing techniques.

The latest contender in single-molecule sequencing is Germany's Genovoxx's AnyGene method. Their Web site states, "The main future application of AnyGene is complete genotyping or, more precisely, the '$1000 Genome.' Complete genotyping will lead to a remarkable change in medicine towards personalized preventive therapy."

While the NIH grants are substantial, Mardis questions how helpful they will be, considering the enormous expense involved in technology development. "Wouldn't it be better [for companies] to go out and get venture capital funding?" she said. "Isn't there already a commercial incentive here, if they have the technology?" Instead, she sees the NIH funding as a catalyst: "The real intent [of these grants] is to drive the work on this type of project."

Last September, at the 15th GSAC, Craig Venter - comoderator of the 2002 panel - announced that the J. Craig Venter Science Foundation (JCVSF) would sponsor a $500,000 prize for the technology closest to achieving a $1000 genome. Rules for the contest, originally planned for release in December 2003, should be announced within the next 2 weeks, according to Heather Kowalski, planning and policy vice president at JCVSF-affiliated The Center for the Advancement of Genomics.

"We find it gratifying that NHGRI is also eager to advance genomic technology and decrease costs of sequencing and is encouraging this through a formal RFA process," wrote Kowalski in an E-mail to us. "We... hope that their recent announcement coupled with ours from 5 months ago will only serve to spur innovation faster and perhaps allow for a $1000 genome sooner that we thought possible."

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